

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Application.

Listing of Claims:

1. (Currently Amended) In a data storage environment having a first volume of data denominated as [[the]] a source being stored on a data storage system, and a second volume of data denominated as [[the]] a clone and which has data content that is a copy of [[the]] data content of the source being stored on the data storage system or on another data storage system, a method of-processing a host computer's request to write data to the source during a restoration of the source, the method comprising the steps of:

restoring the source by copying data content from the clone to overwrite the data content of the source;

~~queing~~ queuing in memory any host computer requests to write or read data for the source that involve data that is being restored from the clone to the source during the ~~queing~~ queuing process; and

copying any data needed to service the host computer requests to write or read data for the source, which step is denominated as a copy on demand step, wherein a map denominated as a copy on demand map is used to track extents being copied during the restoring step and the copy on demand map is used to coordinate the restoring and the copy on demand step to avoid data corruption.

2. (Currently amended) The method of claim 1, and further comprising the step:

preserving the data content of the clone by not allowing it to be overwritten by host writes during the restoring step.

3. (Cancelled)

4. (Cancelled)

5. (Currently amended) The method of claim [[2]] 1, wherein a map denominated as a protected restore map is used to track those extents that are modified due to host write requests ~~during the steps of claim 1 and 2.~~

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Currently amended) The method of claim 5, wherein a map denominated as a clone delta map is used to track extents of the clone that ~~[[may be]]~~ are different from the clone and the source.

11. (Original) The method of claim 10, wherein the clone delta map is used to copy only extents that are different between the clone and its source during the restoring step.

12. (Currently amended) The method of claim 11, wherein the protected restore map is coordinated with the clone delta map for ~~efficient~~ processing of requests to write data to the source.

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)
17. (Cancelled)
18. (Cancelled)
19. (Currently amended) The method of claim [[18]] 10 , wherein the clone delta map is persisted.
20. (Currently amended) The method of claim [[19]] 5, wherein the protect restore map is persisted.
21. (Original) The method of claim 1, wherein the source and the clone are each represented by respective first and second logical units.
22. (Cancelled)
23. (Currently Amended) A system for processing a host computer's request to write data to the source during a restoration of the source, the system comprising:
 - a data storage system having a first volume of data denominated as [[the]] as source being stored on a data storage system, and a second volume of data denominated as [[the]] a clone and which has data content that is a copy of [[the]]data content of the source being stored on the data storage system or on another data storage system; and
 - computer-executable program logic configured for causing the following computer-executed steps to occur^[:]:
 - restoring the source by copying data content from the clone to overwrite the data content of the source;

~~queing~~ queuing in memory any host computer requests to write or read data for the source that involve data that is being restored from the clone to the source during the ~~queing~~ queuing process; and

copying any data needed to service the host computer requests to write or read data for the source, which step is denominated as a copy on demand step, wherein a map denominated as a copy on demand map is used to track extents being copied during the restoring step and the copy on demand map is used to coordinate the restoring and the copy on demand step to avoid data corruption.

24. (Currently amended) The system of claim 23, and further comprising the computer-executed step of:

preserving the data content of the clone by not allowing it to be overwritten by host writes during the restoring step.

25. (Cancelled)

26. (Cancelled)

27. (Currently amended) The system of claim ~~[[24]]~~ 23, wherein a map denominated as a protected restore map is used to track those extents that are modified due to host write requests ~~during the steps of claim 1 and 2.~~

28. (Cancelled)

29. (Currently amended) The system of claim ~~[[28]]~~ 27, wherein the protected restore map and the copy on demand map are used to coordinate copying of data from the clone to the source.

30. (Cancelled)

31. (Cancelled)

32. (Currently amended) The system of claim 27, wherein a map denominated as a clone delta map is used to track extents of the clone that ~~[[may be]]~~ are different from the clone and the source.

33. (Original) The system of claim 32, wherein the clone delta map is used to copy only extents that are different between the clone and its source during the restoring step.

34. (Currently amended) The system of claim 33, wherein the protected restore map is coordinated with the clone delta map for ~~efficient~~ processing of requests to write data to the source.

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Currently amended) The system of claim ~~[[40]]~~ 32, wherein the clone delta map is persisted.

42. (Currently amended) The system of claim ~~[[41]]~~ 27, wherein the protect restore map is persisted.

43. (Currently amended) The system of claim ~~[[1]]~~23, wherein the source and the clone are each represented by respective first and second logical units.

44. (Cancelled)

45. (Currently amended) A program product for use in a data storage environment and being related to processing a host computer's request to write data to the source during a restoration of the source, wherein the data storage environment includes:

a data storage system having a first volume of data denominated as ~~[[the]]~~ a source being stored on a data storage system, and a second volume of data denominated as ~~[[the]]~~ a clone and which has data content that is a copy of the data content of the source being stored on ~~[[the]]~~ data storage system or on another data storage system; and~~[[]]~~

the program product includes computer-executable logic contained on a computer-readable medium and which is configured for causing the following computer-executed steps to occur:

restoring the source by copying data content from the clone to overwrite the data content of the source;

~~queing~~ queuing in memory any host computer requests to write or read data for the source that involve data that is being restored from the clone to the source during the ~~queing~~ queuing process; and

copying any data needed to service the host computer requests to write or read data for the source, which step is denominated as a copy on demand step, wherein a map denominated as a copy on demand map is used to track extents being copied during the restoring step and the copy on demand map is used to coordinate the restoring and the copy on demand step to avoid data corruption.

46. (Original) The program product of claim 45, and further comprising computer-executable logic contained on the computer-readable medium and which is configured for causing the following computer-executed step to occur:

preserving the data content of the clone by not allowing it to be overwritten by host writes during the restoring step.

47. (New) The program product of claim 45, wherein a map denominated as a protected restore map is used to track those extents that are modified due to host write requests.

48. (New) The program product of claim 47, wherein the protected restore map and the copy on demand map are used to coordinate copying of data from the clone to the source.

49. (New) The program product of claim 45, wherein a map denominated as a clone delta map is used to track extents of the clone that are different from the clone and the source.

50. (New) The program product of claim 49, wherein the clone delta map is used to copy only extents that are different between the clone and its source during the restoring step.

51. (New) The program product of claim 50, wherein the protected restore map is coordinated with the clone delta map for ~~efficient~~ processing of requests to write data to the source.

52. (New) The program product of claim 49, wherein the clone delta map is persisted.

53. (New) The program product of claim 48, wherein the protect restore map is persisted.